

Claims

- [c1] 1. A lock management apparatus comprising:
- means for receiving from a processor associated with said lock management apparatus an indicator of a resource to be locked;
 - means for causing a corresponding indicator to be stored;
 - means for causing said stored indicator to be deleted when an associated resource is unlocked;
 - means for receiving from a network a frame indicative of a lock request for a resource;
 - means, responsive to receiving a lock request frame originating from another processor, for checking any stored indicators for a matching locked resource;
 - means, responsive to detecting a match, for transmitting a frame indicative of said resource being locked by said processor to the originator of said lock request; and
 - means, responsive to not detecting a match, for transmitting said lock request frame to the originator of said lock request.
- [c2] 2. The apparatus of claim 1 further comprising:
- means for receiving from said processor associated with said lock management apparatus a provisional indicator of a resource to be locked; and
 - wherein said storing means stores an indicator corresponding to said provisional indicator.
- [c3] 3. The apparatus of claim 1 further comprising:
- means for receiving from said processor associated with said lock management apparatus a check to determine if a resource is locked by said processor; and
 - means for indicating to said associated processor if said resource is locked.
- [c4] 4. The apparatus of claim 1 wherein the associated processor controls a network server in one of a redundant pair of servers.
- [c5] 5. The apparatus of claim 4 further comprising:
- means for receiving from the network a frame from the other of said pair of redundant servers including an indicator of a resource to be locked;
 - means for causing a corresponding indicator to be stored; and

means for causing said stored indicator to be deleted when an associated resource is unlocked.

[c6] 6. The apparatus as claimed in claim 1 wherein the apparatus comprises one of a separate component of a server motherboard or an integral element of a server motherboard.

[c7] 7. The apparatus as claimed in claim 1 wherein said indicators are stored in a content addressable memory (CAM).

[c8] 8. The apparatus as claimed in claim 7 wherein said network is a fibre channel arbitrated loop (FC-AL).

[c9] 9. The apparatus as claimed in claim 8 wherein said transmitting means are adapted to transmit frames to the originator of a lock request via any nodes in said loop between said lock management apparatus and said originator.

[c10] 10. The apparatus as claimed in claim 9 wherein said originator is one of another server or another lock management apparatus associated with another server.

[c11] 11. The apparatus as claimed in claim 10 wherein said CAM is associated with a pair of lock management apparatus, each of which is adapted to receive and transmit frames on a respective one of two redundant loops comprising said FC-AL.

[c12] 12. A method for managing locks comprising:
receiving from an associated processor an indicator of a resource to be locked;
causing a corresponding indicator to be stored;
causing said stored indicator to be deleted when an associated resource is unlocked;
receiving from a network a frame indicative of a lock request for a resource;
responsive to receiving a lock request frame originating from another processor, checking any stored indicators for a matching locked resource;
responsive to detecting a match, transmitting a frame indicative of said resource being locked by said processor to the originator of said lock request;

and

responsive to not detecting a match, transmitting said lock request frame to the originator of said lock request.

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